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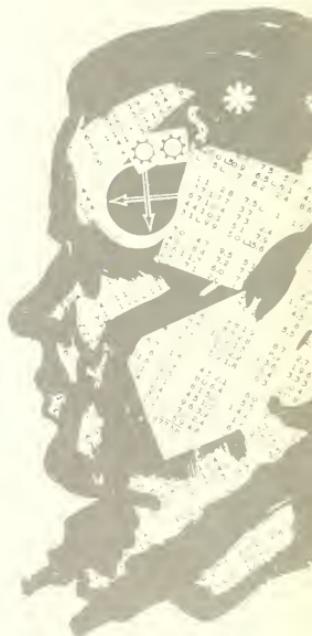
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## AUTOMATION AND THE OLDER WORKER AN ANNOTATED BIBLIOGRAPHY

by  
Juanita Kreps  
and  
Ralph Laws



The National Council on the Aging, New York City





AUTOMATION AND THE OLDER WORKER

An Annotated Bibliography Prepared for the  
Committee on Employment and Retirement  
of the  
National Council on the Aging

by

Juanita M. Kreps and Ralph Laws  
of Duke University

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## FOREWORD

This Annotated Bibliography is published by The National Council on the Aging as a service to those interested in the employment and retirement of aging persons in an industrial society.

This bibliography is one in a series of surveys of the literature of employment and retirement. Others will deal with Training and Retraining of Older Workers, Preparation for Retirement, Criteria for Retirement, and other topics within the subject. The National Council on the Aging plans to have these surveys cross-indexed later.

We wish to thank Dr. Juanita M. Kreps and Mr. Ralph Laws of Duke University for their excellent work in researching and annotating this bibliography. We also wish to thank Mrs. Winifred E. Stone, Librarian for The National Council on the Aging, for obtaining many of the publications cited, and Mr. Norman Sprague, Staff Consultant on Employment and Retirement of The National Council on the Aging, for preparing a preliminary selected bibliography, The Implications of Automation and Technological Development for the Employment of Older Workers, published in August 1962.

The research required to prepare this Bibliography was financed by a gift from the International Business Machines Corporation.

Garson Meyer, President  
The National Council on the Aging

Edwin F. Shelley, Chairman  
Committee on Employment and Retirement

New York, N. Y.  
January 1, 1963

#### NOTES ON THE AUTHORS

Dr. Juanita M. Kreps, associate professor of Economics at Duke University, coordinated the research done by that department under a Ford Foundation grant for studies in the socio-economics of aging. She is co-author of Principles of Economics (Holt, Rinehart and Winston, New York, 1962) and editor of Employment, Income and Retirement Problems of the Aged (Duke University Press, 1963).

Ralph Laws is a graduate student at Duke University.

## INTRODUCTION

The literature on automation and technological change is vast, even when limited to works published since 1950. Similarly, the number of studies of changing employment opportunities for older workers has grown rapidly in recent years. Investigations of the influence of advancing technology on older worker employment have been quite limited, however.

Since the studies available pertain either to automation or to older workers but seldom to both, it has been necessary to select publications which (1) give the members of the Committee on Employment and Retirement the background information which they requested in the two areas; (2) analyze the effect of technological advance on job opportunities for all workers; (3) present data on age-related differences in the capacities of workers to adjust to particular job characteristics; and (4) consider the policy implications of automation, particularly as they relate to employment. Needless to say, not all the available publications in these areas are included.

At the request of the Committee on Employment and Retirement of The National Council on the Aging, these summaries of some of the published works have been prepared. Since The National Council on the Aging is planning to have a series of surveys cross-indexed, no attempt has been made to divide this bibliography into subtopics.

J. M. K.

R. L.

Durham, North Carolina

January 1, 1963



Adams, Leonard P. and Robert L. Aronson. Workers and Industrial Change: A Case Study of Labor Mobility, Cornell Studies in Industrial and Labor Relations, Vol. VIII. Geneva, N.Y., W.F. Humphrey Press, Inc., 1957. 209 pp.

This is an analysis of the Auburn, N.Y. labor market following the shutdown of the area's major plants. Data were obtained by interview and follow-up questionnaires from a 20% sample of 249 employees of other firms, and by questionnaires from the high schools' senior classes. The main topics discussed are worker adjustment to industrial change, organization of the labor market, public and private assistance to displaced workers, mobility and adaptability, and formal education as preparation for work.

AFL-CIO, Industrial Union Department, Research Section. Automation's Unkept Promise. Publication No. 47. Washington, 1962. 28 pp.

A general survey of the impact of automation on output and employment, this article re-examines the propositions that automation as well as all forms of technical change always create more jobs than they eliminate, and that automation is a slow, evolutionary process which leads to a massive upgrading of the labor force. Since the market mechanism is inadequate to insure an equitable distribution of the gains from progress, increased government efforts are called for in the solution of the problem.

The American Federationist. "The Impact of Automation - A Challenge to America," August 1961. pp. 12-19.

Considers the areas of responsibility of government, business, and labor in meeting the problems of automation. Federal, state, and local government responsibility extends to problems such as retraining, employment service, distressed areas, and older workers. Collective bargaining is expected to help implement these programs, and to explore further such measures as automation funds.

Bancroft, Gertrude. "Older Persons in the Labor Force," Annals of the American Academy of Political and Social Science, Vol. 279, January 1952. pp. 52-61.

The author discusses the extent to which part-time jobs and high levels of defense spending may be expected to provide employment for older workers. The spread of urbanization, she points out, has adversely affected the number of seasonal jobs. Continued high levels of defense spending are likely to result in shifts of younger workers to more essential activities, thus opening up trades and services to older persons. Job prospects for older women are also discussed.

Banks, Olive. The Attitudes of Steel Workers to Technical Change. Social Research Series, Liverpool University Press, 1960. 152 pp.

This is a detailed analysis of a phase of technical innovation in a particular steel firm. It attempts, first, to assess the change as it appeared to the men directly concerned, then to identify the main determinants of the men's attitudes and to ascertain the relevance of these attitudes for the successful assimilation of future changes. Throughout the analysis, wage experience and age are used as a basis of classification and comparison. Few signs of hostility to the particular technical change or to technical change in general are found, even among those suffering loss of earnings or status.

Barkin, Solomon. "Automation and the Community," Governor's Conference on Automation, Cooperstown, N.Y., 1960.

The author studies the role of automation in the contraction of employment in thirteen distressed areas in New York State. In the future more social policies, agencies, and programs designed to help communities prevent economic deterioration will be needed.

Barkin, Solomon. "Educating Students for Personal and Economic Growth," American Vocational Journal, Vol. 36, No. 8, November, 1961. Reprinted by Textile Workers Union of America, Research Publication P-228.

This article discusses the changing educational requirements caused by a developing technology and economy. The author calls for preparation of people not merely for a specific range of employments, but also for a whole lifetime of changing jobs and occupations. There must be an increase in people's capacity for adjustment, conceptualization, and assumption of responsibility.

Barkin, Solomon. "Implications of Developments in Automation for Our Economy," The American Economy: An Appraisal of Its Social Goals and Impact of Science and Technology, ed. Haig Babian, New York, Joint Council on Economic Education, 1958. pp. 97-113. Reprinted by Textile Workers Union of America, Research Department, New York.

The impact of automation on economic stability, distressed areas, and changing job patterns is discussed. The author notes the centralization of data and its effect on decision making, and calls for debate among all parties as a means of providing national guide lines to meet the problems created by automation.

Barkin, Solomon. "Job Redesign: Technique for an Era of Full Employment," Chapter III from Manpower in the United States: Problems and Policies, edited by William Habor, Frederick H. Harbison, Lawrence R. Klein and Gladys L. Palmer for the Industrial Relations Research Association, New York, Harper & Bros., 1954. pp. 39-50. Reprinted by Textile Workers Union of America, Research Publication A-92, New York.

The author calls for a switch from the traditional emphasis on placing people in the proper jobs to one of fitting jobs to people. He discusses the past success of job design for certain special groups and lists a number of guides to follow to assist in increasing the job opportunities of older workers.

Barkin, Solomon. "Jobs for Older Workers." Journal of Gerontology, Vol. 7, No. 3, July 1952. pp. 426-430.

Emphasizes the need for redesigning jobs so that the full potentiality of the older worker may be maintained, and examines briefly some prominent findings of earlier studies made in 1931 in New York State and in 1951 by the Nuffield Foundation. These studies dealt with the job characteristics most suitable for older workers. The author suggests that technological advances may improve the employment opportunities for older persons.

Barkin, Solomon. "More Implications of Automation." I.U.D. Digest, Fall 1959. pp. 115-123. Reprinted by Textile Workers Union of America, Research Publication P-221B, New York.

Summarizes the implications of automation for workers, and notes that vigorous government action is necessary to provide an equitable distribution of the gains from automation.

Barkin, Solomon. "Redesigning Jobs in Industry For A Maturing Population," Age Is No Barrier, New York State Legislative Document No. 35, 1952. 171 pp.

Discusses the flexibility of jobs, the feasibility of compulsory hiring of older persons, and the redesign of jobs. Historically, jobs have been tailored to the available labor supply; however, management has not analyzed fully the changes in the current labor supply, especially the growing proportion of older workers. The real source of discrimination against older workers, the author believes, is the high rate of technical turnover of jobs caused by advances in technique in new plants and industries. He advocates requiring new concerns to meet specific ratios of mature persons (men over 45, women over 35) to the total work force, and concludes with a listing of some physical and mental factors relevant to any redesign of jobs for older persons.

Barkin, Solomon. "Statement Before the Subcommittee on Unemployment and the Impact of Automation" (and 3 papers), Impact of Automation on Employment; Hearings, U.S. House Committee on Education and Labor, 87th Congress, first session, March 21, 1961. Washington, U. S. Government Printing Office, 1961. pp. 170-256.

Reprinted in these hearings are papers by Mr. Barkin and an accompanying statement, in which he calls for a National Development Council, and collective bargaining agreements which will help to cushion the impact of automation. An analysis of the impact of postwar automation on the textile industry is presented.

Bers, Melvin K. Union Policy and The Older Worker. Berkeley University of California, Institute of Industrial Relations. 1957. 87 pp.

The author reports the result of a survey conducted mainly through personal interviews with union officials of a dozen major unions in the San Francisco Bay area. Hiring, lay off, discharge, wage adjustment, and pension and retirement programs are reviewed. In general, it is concluded that the older worker who is a union member fares better as a result of union policies. This results primarily from union policies aimed at strengthening the union as an organization of increasing the prosperity of union members as a whole. Policy measures designed to aid the older worker specifically were not of major importance, and varied with the attitude of the leadership, given the strength of the union relative to the employer. The second section of the report, devoted to pension and retirement programs, concludes that pension programs are valued by union officials, at least in part, as devices to drain older workers off the market.

Black, James Menzies. "The Hidden Trap in Automation," Dun's Review and Modern Industry, May 1961. pp. 53-54 ff.

This article discusses some implications of automation for business, labor, and government. The author feels the most complex problem will be that of retraining displaced workers.

Botwinick, Jack and Nathan W. Shock. "Age Differences in Performance Decrement With Continuous Work," Journal of Gerontology, Vol. 7, 1952. pp. 41-46.

In an investigation of the relationship of age to speed of response, six simple tasks were performed by 50 subjects aged 20 to 29, and 50 subjects aged 60 to 69. Results show that performance decline with continued repetition of tasks was greater in the younger population than in the older one, although initial and final levels of performance were higher in the younger population.

Braunthal, Alfred. "The Trade Union Movement Faces Automation," International Labor Review, Vol. 76, No. 6, December 1957. pp. 540-57.

A statement of policy adopted by a large section of the international trade union movement, as well as a tentative forecast of the effects of automation on the structure of trade unions.

Breckinridge, Elizabeth L. Effective Use of Older Workers. Committee on Aging. Chicago, Wilcox and Follett Company, 1953. 224 pp.

A survey of 90 companies (73 of which were in manufacturing) with special programs and procedures for older workers. The study explores the ways in which the companies are using older workers effectively, and the procedures being devised to facilitate retirement and subsequent adjustment.

Business Week. "Retraining Works for the Fortunate Few." June 17, 1961. pp. 73-74.

The results of a retraining program at abandoned coal pits in Belgium are reported. Retraining was found to be successful only if: (a) the worker is young, and if he is capable of learning new skills; (b) he gets training in fields where specific jobs exist. Retraining is not a practical solution for the great majority of workers. The major obstacle was found to be the age barrier, with underground workers over 35 rarely being capable of retraining.

Canada, Department of Labor, Economics and Research Branch. Age and Performance in Retail Trade. Study of two Canadian Department Stores. Ottawa, Queen's Printers, No. L 42-659, 1959. 16 pp.

This study attempts to assess the frequent claim that as chronological age advances, job performance declines. Performance was measured by average daily sales in Store A and average weekly sales in Store B and was related to age at hiring, to experience, and to age and experience. No significant difference in performance was found between older and younger employees. Performance improved somewhat with age and with length of service, with peak performance being reached between the ages of 51 and 55.

Canada, Department of Labor, Economics and Research Branch. The Aging Worker in the Canadian Economy. Ottawa, 1951. 61 pp.

Statistical information indicating trends in the age composition of the Canadian population and labor force, status characteristics of the older labor force, occupational composition of the older labor force in 1921 and 1951, rates of unemployment among older workers, and income levels among older people. The study is concerned primarily with the worker over age 65, and secondly, with workers age 45 to 64.

Clark, F. LeGros, and Agnes C. Dunne. Ageing in Industry. London. Nuffield Foundation, 1955.

This detailed survey of 32 selected occupations compares the varying conditions of work, the opportunities for modifying the work processes, and the retirement and superannuation practices peculiar to different occupations. In each industry, the method of "moving cohorts" was used to determine the number of men that would survive to an advanced age. An alternative method used was that of age-group ratios: the ratio of men 65 and over to those 35 to 64.

In the concluding chapter occupations are further differentiated by their survival rates, i.e., by the percentages of the total number of men who, at their mid-sixties, are still on their accustomed jobs and in a reasonable state of working efficiency.

Clark, F. LeGros. Ageing on the Factory Floor: The Production of Domestic Furniture. London, Nuffield Foundation, 1957. 35 pp.

This study found that some adjustments or concessions had to be made for about three in ten of those men in their early sixties, for about six in ten of those in their late sixties, and for practically all the working survivors who were in their seventies. Where retirement occurred, it was due as often to old age as to some chronic ailment or physical impairment.

Clark, F. LeGros. Growing Old in A Mechanized World: The Human Problem of a Technical Revolution. London, Nuffield Foundation, 1960. 145 pp. (Studies of Ageing Within Conditions of Modern Industry).

After considering the effect of changing manufacturing methods on the employment prospects for older men, the author concludes that their chances of remaining at work will almost certainly diminish. This conclusion holds particularly for men beyond the conventional retiring age, and indicates a need for a new social theory of retirement. The major part of the study is devoted to an examination of the employment problem encountered in a series of large manufacturing plants. An appendix surveys employment prospects outside the field of manufacturing, which might offer alternative occupations for elderly men.

Clark, F. LeGros. "Physical Problems in the Employment of Aging Men," International Labor Review, Vol. 76, October 1957.

Examines the extent of chronic sickness in the aging, alternative occupations open to the elderly, and measures which might prolong working life. The number made unemployable by sickness increases steadily from 10 to 20 per cent in the five years following age 65, the incidence being approximately the same for most occupations. Variations in retirement rates are found to be due to characteristics of the job.

Clark, F. LeGros. "Would Short Working Hours Prolong Employment for the Elderly?" Fourth Congress of the International Association of Gerontology, July 1957. pp. 109-119.

This paper analyzes part-time employment of older men and women as a partial solution to their employment problems, and concludes that at present part-time employment has only limited application. In those occupations where it is applied, part-time work makes a significant contribution toward meeting the needs of elderly employees.

Clark, S. D. The Employability of the Older Worker. A Review of Research Findings. Ottawa, Economic and Research Branch, Department of Labor, 1959. 26 pp.

A summary of the more important research findings on the relation of the older worker to employment practices, work capacity, work disadvantages, and labor market demands. Although hiring, separation, and retiring practices favor the younger worker, there is also substantial institutional discrimination in favor of the older worker. Studies of work performance are inconclusive since a prior selection of jobs on the part of older workers has taken place, and a prior selection of older workers has been made by employers. The author endorses the Nuffield conclusion that the process of selection of workers for different jobs is indicative of work capacity; and that the existence of discrimination cannot be demonstrated.

Clay, Hilary M. The Older Worker and His Job. Department of Scientific and Industrial Research. London, Her Majesty's Stationery Office, 1960. 20 pp.

This report deals with the physical and mental changes that occur after age twenty, and the effects of these changes on the employment of older people. Jobs requiring knowledge, accuracy, and stability, or medically permissible heavy physical work are particularly suitable for older workers. Older workers are at a disadvantage, however, in positions requiring speed, or where information must be stored or processed in some way before action can be taken. Retraining programs must be slowly paced and not forced.

Corson, John J. and John W. McConnell. "Employment and Retirement." Chapter 3, pp. 49-86, Economic Needs of Older People. New York, The Twentieth Century Fund, 1956.

In this chapter the authors summarize relevant statistical data, and discuss the kinds of jobs in which older people work, their special unemployment problems, common beliefs and facts about older workers, forces that sustain jobs for them, special problems of older women in the labor force, and the reasons for stopping work. The pros and cons of compulsory retirement policy are analyzed.

Croak, G. Hamilton and Martin Weinstein. The Older Worker in Industry. Berkeley Institute of Industrial Relations, University of California, 1958. 143 pp.

In a sample survey of 846 industrial workers in the San Francisco and Los Angeles areas, the workers were interviewed at their place of employment during working hours, and also given a test designed to measure physiological age. The main body of the report presents the results of the survey as concerned particularly with the relationships between age, attitudes toward work and retirement, and the productive efficiency of older workers. Appendices A and B apply to data to the development of a physiological index of aging.

Culley, Jack F., and Fred Slavick. Employment Problems of Older Workers. Iowa City Bureau of Labor and Management, College of Commerce, State University of Iowa, 1959. 38 pp.

Part II of this report examines discriminatory policies in the hiring of older workers. It first notes that age is more of a barrier to women than to men, and that the typical union position protects the already employed older worker but hinders the unemployed. Characteristics of the older worker are analyzed: stability, attitude toward supervision by younger men, wage level expectation, absenteeism, adjustability to changing work patterns, degree of skill, ability to meet physical requirements, productivity, and impact on company pension or group insurance costs. Finally, the authors consider the removal of unjustifiable age restrictions through legislative action, with special reference to existing legislation in Pennsylvania, Massachusetts, and New York, and through voluntary action.

Denise, Malcolm L. "Statement Before the Subcommittee on Unemployment and the Impact of Automation." Impact of Automation on Employment; Hearings, U.S. House Committee on Education and Labor, 87th Congress, first session, April 17, 1961. Washington, U. S. Government Printing Office, 1961. pp. 509-574.

In his statement before the committee, the vice president of Ford Motor Co. discusses Ford's experience with automation and the company's policies designed to alleviate the impact of automation on employment. It is impossible to isolate automation as a cause of unemployment, he concludes. The one major remedy for unemployment is faster economic growth.

Derber, Milton (ed.).. The Aged and Society. Champaign, Industrial Relations Research Section, 1950. 237 pp.

The papers from the first research Symposium of the Industrial Relations Research Section include, in the first section, three papers treating the changing age profile of the population, the aged in industrial society, and the aged in rural society. The six papers of the second part discuss older workers and social patterns: the labor market, the role of industry, union policies, self-provision, retirement age, and social provisions for the aged. The last section contains six papers on varied topics of research interest: "Personal and Social Adjustment in Old Age." "The Politics of Age." "The Contribution of Psychology," "The Employability of Older People," "The Mental Health of Older Workers," and "Medical-Social Aspects of the Aging Process."

Diebold, John. Automation: Its Impact on Business and Labor, Planning Pamphlet No. 106. Washington, National Planning Association, 1959. 64 pp.

The author describes some of the developments of automation that have occurred, presents the current arguments on the economic and social consequences of automation, and outlines the framework for a recommended study of automation.

Donahue, Wilma, ed. Earning Opportunities of Older Workers. Ann Arbor, University of Michigan Press, 1955. 217 pp.

Based upon papers presented at the University of Michigan Sixth Annual Conference on Aging, the first section of six papers treats trends and factors in the employment of older workers. Section two is concerned with the employability of older persons, and the third with the special problems of older women in the labor force. Finally, the question of adapting jobs to the older worker is discussed, and methods and resources of creating new earning opportunities for older workers are outlined.

Drake, Joseph T. "The Aged in the Labor Force." The Aged in American Society. New York, The Ronald Press, 1958. pp. 63-77.

In this chapter the author examines the age and occupational distribution of the labor force, pointing out that only four out of ten people over age forty-five are in the labor force. He indicates the aged contribute more than their proportionate share to the labor reserve, which is composed of people who worked during and since the war but are no longer in the labor force.

Dunlop, John, ed. Automation and Technological Change. Englewood Cliffs, New Jersey, Prentice-Hall, Inc. 1962. 180 pp.

Nine American Assembly papers with an introduction by John T. Dunlop and a concluding chapter by Henry W. Wriston. The Assembly's recommendations for private and public policies include: maintenance of a high level of employment, improved education of the labor force, better labor market information and manpower training. A general reduction in hours worked per week is not recommended; instead, the Assembly concludes, the nation requires a growing output. Of particular significance to the subject of employment: "Educational and Social Consequences," by Lee A. DuBridge; "Collective Bargaining," by George W. Taylor; "Some Economic Considerations," by W. Allen Wallis; "Employment," by Ewan Claque and Leon Greenberg; and "International Aspects," by Richard N. Cooper.

Einzig, Paul. The Economic Consequences of Automation. New York, W. W. Norton and Company, 1957. 255 pp.

The author examines the effects of automation with respect to employment, increases in output, price levels, relative shares, capital requirements, international trade, business cycles, monetary and fiscal policy, and economic considerations of national defense. The main conclusions are: (1) it is of vital importance to proceed with automation at the utmost speed, and (2) automation is likely to intensify the effects of a business slump.

England. Employment of Older Men and Women, Second Report of the National Advisory Committee. London, Her Majesty's Stationery Office, 1955. 26 pp.

A report of progress on the employment of older people, and suggestions of general lines for future developments. Problems associated with pension plans, age structure and promotion, adaptability to training, and part-time employment are discussed. The ages at which men retire in different industries is diagramed in an appendix.

Fox, Harland. "Utilization of Older Manpower," Harvard Business Review, Vol. 29, November 1961. 26 pp.

The author examines three aspects of the question of work opportunities for the aged: post-retirement utilization of workers, workers' preferences at the normal retiring age, and utilization of workers at ages 45 to 65. He concludes that the prime obstacle to utilization of workers over 65 is the growth of private pension plans. Because of the need for economic security as well as the need to maintain certain non-economic values ("staying busy," status in the family), the majority of employees who reach 65 prefer to continue work. The major problems for those 45 to 65 is a greater susceptibility to unemployment, and the prevalence of maximum hiring ages.

Goldberg, Arthur J. "The Challenge of Industrial Revolution II," New York Times Magazine, April 2, 1961. pp. 11 ff.

The author discusses the effects of automation on employment and the composition of the labor force. He cites the need for maximum cooperation of all segments of the community and describes two communities' successful experience in easing the impact of automation.

Goldberg, Arthur J. "Statement Before the Subcommittee on Unemployment and the Impact of Automation," Impact of Automation on Employment; Hearings, U. S. House Committee on Education and Labor, 87th Congress, first session, April 25, 1961. Washington, U. S. Government Printing Office, 1961. pp 651-677.

The former Secretary of Labor discusses the general problem of technological change and unemployment, and suggests that a co-ordinated attack by management and labor, local and state governments, and the federal government will be necessary.

Goodman, L. Landon. Automation Today and Tomorrow. London Iota Services Ltd., 1958. 158 pp.

This study is concerned with the technical aspects of automation, its present developments and future trends, and some specific applications. There is also an extensive annotated bibliography covering most of the technical advances in automation.

Gordon, Margaret S. Projecting Employment Opportunities for Middle Aged and Older Workers. University of Michigan Conference on Aging, Ann Arbor, 1962. 25 pp.

The author is concerned primarily with the effect of labor market changes on employment opportunities of middle-aged and older workers. The upward drift in the unemployment rate and changes in the occupational structure associated with automation and other technological and structural changes are discussed. Analysis of labor market data for the 1950's shows: (1) the difference between the unemployment rate (and the long-term unemployment rate) for older and younger men has narrowed; (2) the unemployment rate for older women has risen less than that for women aged 35-44, although the difference between the long-term rate for the two age groups has narrowed; (3) the labor force participation rate for older men has declined sharply and that for older women has risen sharply; (4) part-time employment rates have risen slightly for both men and women; (5) there has been an occupational shift toward white collar jobs for both sexes.

Griew, S. and W. A. Tucker. "The Identification of Job Activities Associated with Age Differences in the Engineering Industry," Journal of Applied Psychology, Vol. 42, No. 4, 1958. pp. 278-82.

This article attempts to identify job activities which are likely to differ among younger and older workers, and which may represent areas where modification of jobs for older workers may be effective. The actual jobs performed by 88 subjects in two age groups (24-30 years, 48-61 years) in ten selected industrial occupations were examined. Results indicate that modification would be effective in the areas (1) where there are redundant controls or displays, (2) where stooping is required, and (3) where work must be watched extremely closely.

Heron, Alastair. "Age and Automation," Personnel Management, Vol. 34, No. 341, September 1957.

The author emphasizes the need for a major research effort on the problem of training mature adults to meet automation's demand for new knowledge and skills.

Hoos, Ida Russakoff. "The Impact of Office Automation on Workers," International Labor Review, October 1960. pp. 363-388.

The conversion of office clerical systems to electronic data processing is studied. In general, the immediate results of such conversions is job displacement and dislocation, including dismissals, downgrading, and transfers. The impact on older workers is found to be particularly severe, since their value to the company is often based on their knowledge of the clerical system being supplanted.

Hope, Stanley C., Craig P. Cochrane, Solomon Barkin, and Marshall Harris. "Should There Be A Fixed Retirement Age?" Annals of the American Academy of Political and Social Science, Vol. 279, January, 1952. pp. 72-83.

A discussion of the question of fixed retirement age, including business statements both for and against compulsory retirement, a statement from a representative of organized labor, and a discussion of the problem in agriculture.

King, H. F. "An Attempt to Use Production Data in the Study of Age and Performance," Journal of Gerontology, Vol. 11, 1956. pp. 410-16.

The production records of women sewing machinists during four eight-week periods between 1949 and 1953 reveal a peak of production around the age of 30. At ages above 35 a slow decline was observed.

Kirchner, Wayne K. "Attitudes of Special Groups Toward the Employment of Older Persons," Journal of Gerontology, Vol. 12, April 1957. pp. 216-220

A report on the responses of seven special groups to twenty-four questions designed to reveal attitudes toward employment of older persons. The groups included psychologists, vocational guidance workers, supervisory trainees, and personnel people. All groups tended to avoid extreme responses, with no great like or dislike for employment of older persons being expressed.

Koyl, L. F. "Age Changes and Employability," Public Health Reports, Vol. 71, December, 1956. pp. 1195-1202.

A preliminary report of a study conducted by the Department of Veterans Affairs of Canada, the purpose of which is to study a large group of aging employed persons over a period of years to discover the incidence and the rates and direction of change in the various pathological processes accompanying age. Conclusions are: (a) functional deterioration in mentality and personality antedate and overshadow organic deterioration, and (b) the increasing rigidity of the aging employee makes large retraining schemes in industry uneconomical, except where an absolute shortage of a skilled trade exists.

antedate and overshadow organic deterioration, and (b) the increasing rigidity of the aging employee makes large retraining schemes in industry uneconomical, except where an absolute shortage of a skilled trade exists.

Lawrence, Phillip S. Availability for Work: Chronic Disease and Limitation of Activity: Part I. Measurement and Availability for Work in Relation to Health and Other Factors. Part II. Illness and Limitation of Activity Among Older People. Public Health Monograph No. 51. Public Health Service, U. S. Department of Health, Education and Welfare. Washington, U. S. Government Printing Office, 1958. 46 pp.

This is a study of the health and availability for employment of people over 45 years of age who are not in the labor force, but who would consider entering or re-entering the job market. It is based on a survey of 1,157 addresses in Hagerstown, Md.; with 600 interviews being obtained out of 615 eligible households. Part I emphasizes the methodology. The second part provides detailed information on chronic disease and impairment and limitation of activity.

Long, Clarence D. The Labor Force Under Changing Income and Employment. National Bureau of Economic Research Study No. 65. Princeton, Princeton University Press, 1958. 440 pp.

This is an exhaustive empirical study of labor force behavior, concerned particularly with the influence of changes in income and employment on labor force participation. Findings in Chapter Nine, Older Workers in the Labor Force, indicate that with some exceptions, men aged 65 and over have reduced their labor force participation far more than have young men or teen-age boys. In explaining the reduced participation of older workers the following factors are reviewed: the influence of longer life span, extension of retirement benefits, rising real earnings, changing physical condition, mandatory retirement, technological change, migration from rural to urban areas, decreasing self-employment, and increase in the size of the firms.

McConnell, John W. "The Employment of Middle-Age and Older Workers." Charter For the Aging, New York State Governor's Conference, 1955. pp. 118-163.

An examination of the aging worker's position in the labor force, some obstacles to his employment, and the government as an employer of middle-age and older workers. Discussion of the responsibilities of public and private organizations and government to improve employment opportunities and security for aging workers.

McConnell, John W. "The Problems of Work and Time for Older Persons." In A Summary of the Proceedings of the STATE-WIDE CONFERENCE ON AGING, New York (State) Office for the Aging. Albany, 1962. pp. 29-38.

The author points out that automation and other technological innovations are creating greater productivity with fewer people needed in the labor force. As new automated processes of production are introduced, the workers who are eliminated are older workers who have poorer educational backgrounds. When one considers the possibility of retraining these workers, it becomes not a matter of retraining for a specific job but a matter of providing a general educational background upon which the specific training must rest. The author concludes that because automation and other factors are eliminating jobs for older workers, as a society we must examine our individual moral and spiritual values in their relationship to work and leisure.

McFarland, Ross A. and Brian W. O'Doherty. "Work and Occupational Skills," Chapter XIV in Handbook of Aging and the Individual, ed. by James E. Birren. Chicago, University of Chicago Press, 1959. pp. 452-96.

This chapter considers the efficiency of older people at work. Age changes in physical and mental functions, as they affect performance, are summarized, and methods of matching older people and their jobs are described. The authors also discuss the performance of older people in industry, with special emphasis on highway

and air transportation, and consider the difficulties of retraining older workers. Recent research on learning is described.

Medvin, Norman. "Employment Problems of Older Workers," Social Security Bulletin, Vol. 20, April 1957. pp. 14-20.

The results of 1955-56 survey of the labor-market problems of the older worker in seven metropolitan areas are described, the analysis focusing on information regarding (1) the characteristics of unemployed older workers; (2) employment patterns and hiring practices as they relate to older workers, and (3) the nature and scope of services rendered older workers through the offices of the employment security system. The relation of age to earnings in industry, by occupation, by size of firm, and by assistance to pension plan is analyzed. In appraising his capacities, the older worker is compared with the younger one on the criteria of (1) skills, (2) education, (3) disability, (4) job stability, and (5) labor force attachment.

Monroe, Howard O. "The Demands of Automation," American Vocational Journal, Vol. 36, No. 4, April 1961. pp. 12-13 ff.

Discusses the implications of automation for employment, training, and retraining. Emphasizes need for training in new skills.

Murkell, K. F. H., S. Griew, and W. A. Tucker. "The Age Structure of Some Firms in the Engineering Industry," Fourth Congress of the International Association of Gerontology, July 1957. pp. 147-152.

This report investigates the extent to which age differences are associated with types of jobs in the light engineering industry. Data on job classifications of about 10,000 men in 7 English engineering firms reveal a correlation of age with particular jobs in all seven firms.

National Association of Manufacturers. Employment of Mature Workers. New York, September 1960. 36 pp.

This report on the employment of older workers examines some barriers to hiring, the role of government in this area, and industry's performance today. The danger of growing government control is noted, and the elimination of age barriers in hiring is recommended.

O'Brien, James C. "Automation and the Older Worker," Chapter VII, The Ethical Aftermath of Automation, edited by Francis X. Quinn, S. J. Westminster, Maryland, The Newman Press, 1962. pp. 87-103.

The author deals with the relationships between urbanization, automation, and the particular employment and unemployment problems created for older workers. He cites the number of persons 65 and over who have incomes of less than \$1,000 per year to live on. To these he adds the number of persons unemployed and the number working who do not have a minimum wage of \$1.00 per hour and points out that there is a clear need for management, labor and the community to join forces in seeking new solutions to the problems raised.

Ross, Arthur M. and June N. "Employment Problems of Older Workers," Studies in Unemployment, prepared for the Special Committee on Unemployment Problems, U. S. Senate, 86th Congress, second session, Washington, U. S. Government Printing Office, 1960. pp. 97-120.

The authors discuss economic and social developments (decline in self-employment, growth of large firms, changes in family structure and in the occupational composition of the labor force, educational obsolescence, differential rates of industry growth, geographical movements of industry, and the growth of formal pension and retirement systems) which have contributed to unemployment problems of older workers. They also review employer hiring policies and summarize the types of protection given older workers under union agreements.

Ruttenberg, Stanley H. "Statement Before the Subcommittee on Unemployment and the Impact of Automation," Impact of Automation on Unemployment; Hearings, U. S. House Committee on Education and Labor, 87th Congress, first session, March 29, 1961. Washington, U. S. Government Printing Office, 1961. pp. 379-403.

Mr. Ruttenberg suggests necessary policies and programs in two areas: first, the area of Federal responsibility, which requires higher growth rates, federalization (or at least standardization) of the U. S. Employment Service, research in techniques of re-training older workers, and the adoption of shorter work weeks; second, the area of collective bargaining, where policies and programs are needed to ease the transition problems of technical change.

Sheppard, Harold L. and others. Too Old To Work--Too Young To Retire: A Case Study of a Permanent Plant Shutdown, U. S. Senate Special Committee on Unemployment Problems, 86th Congress, first session. Washington, U. S. Government Printing Office, 1960. 74 pp.

This report on the effects of the 1956 permanent shutdown of the Packard Motor Company is drawn from interviews with 500 former employees. It describes experiences of the workers, the duration of their unemployment, the kinds of new jobs they obtained, and the extent to which skill level, race, and age influenced their opportunities for re-employment. Skilled workers, who had the shortest length of unemployment, nevertheless had difficulty keeping their jobs. Negroes were the least fortunate in duration of unemployment and in keeping a job, and workers over 50 were in an unfavorable position. By 1958, no more than three-fifths of the sample were working at jobs at skill levels as high as those held at Packard. Service industries hired more negroes than whites. The proportion of younger workers (under 45) hired by the big three automobile companies were nearly four times the proportion between the ages of 55 and 64.

Sheppard, Harold L. and James L. Stern. "Impact of Automation on Workers in Supplier Plants." Labor Law Journal, Vol. 8, No. 10, October 1957. pp. 714-718.

This article reports on a study of a small plant which closed during a period of high and expanding output and employment of the industry. Findings show that 71 per cent of the sample gained employment within a year with an average wage reduction of 4 per cent. One-half the sample exhausted their 26-week unemployment compensation benefits. Re-employment opportunities were substantially affected by factors of race, sex, age, and physical handicaps.

Shock, Nathan W. "Trends of Employment and Retirement." Trends in Gerontology. pp. 15-33. Stanford, Stanford University Press, 1957. Second Edition.

The author examines data on trends in employment and retirement, which reveal that (a) of the total male population aged 65 and over, the per cent employed was 68.2 in 1890 as compared to 38.7 in 1954, with an estimated 30.3 per cent expected in 1975; (b) short-term unemployment falls consistently with age, but long-term unemployment becomes more pronounced in higher age categories; (c) only 4 or 5 per cent of the workers retire voluntarily while in good health; and (d) only 10 per cent of the workers over aged 65 are actually incapacitated, although 60 to 65 per cent have some physical disability.

Steiner, Peter O. and Robert Dorfman. The Economic Status of the Aged, Chs. 4 and 5, pp. 38-66. Berkeley University of California Press, 1957.

These chapters investigate the labor force status of men and women over age 65. Findings include: (1) men's labor-force participation varies in accordance with their assessment of their ability to work; (2) retirement was normally voluntary and primarily because of poor health; (3) older men have been left behind to some extent by the shifting occupational distribution of the economy; (4) organized

efforts to assist older men to return to the labor force should lay particular emphasis on developing opportunities for part-time employment; (5) women over 65 are generally not in the labor force.

Stern, James. "Possible Effects of Automation on Older Workers," Vocational Guidance Quarterly, Vol. 4, 1955-56. pp. 41-45.

The author believes that automation will lead to business concentration and fewer employment opportunities, especially for "disadvantaged" groups, such as older workers. Discrimination against hiring and training older workers exists, reflecting a gap between private and social cost. He summarizes the United Auto Workers attempts to deal with the problem of older worker displacement.

Tarner, Arthur N. "The Older Worker: New Light on Employment and Retirement Problems," Personnel, Vol. 32, November 1955. pp. 246-257.

Some general research findings on productivity, learning time, attitudes, and part-time work, as related to the older worker, are presented in section one. The second section describes the experience of two companies with different retirement policies. In the first, no one had to retire, or wanted to. In the second, retirement was compulsory at 65, and no one wanted to stay on the job till then.

Welford, A. T. Ageing and Human Skill. Centered on Work of Nuffield Unit for Research into Problems of Ageing. London, Oxford University Press, 1958. 300 pp.

This is the final report of the Nuffield Unit on the study of changes in performance with aging. It includes both laboratory and field studies and draws selectively on the general literature. The studies reveal that changes with age lie essentially in the central control and guidance of actions. Such change affects behavior by lowering the capacity of the organism's

information channel, causing a need for stronger signals or for the integration of data over a longer time before it can become a sufficient basis for action. Also, the amount of data that can be stored tends to diminish, and what is stored is more susceptible to interference and disruption from other simultaneous activity. The report concludes that where age changes do impinge upon performance, some relatively trivial factor may often be limiting the aged's performance. Thus, a comparatively small change in the task could bring it within the capacity of the older person.

Welford, A. T., et al. Skill and Age. London, Oxford University Press, 1951.

This is a report on a series of psychological laboratory experiments. Two general types of tests are presented: One group of five experiments dealing with manipulatory skills, the other group of four experiments on mental skills. Each type of test involved from 50 to 142 subjects. In attempting to extend the laboratory to the factory, data on 95 operations in 24 factories are analyzed, showing relationships between age and the size of working group, the system of payment, and time-stress.

Weinberg, Edgar. Social Implications of Office Automation. Paper presented at the Annual Conference of the Association for Computing Machinery, Milwaukee, Wisconsin, August 24, 1960. Washington, U. S. Department of Labor, Bureau of Labor Statistics, 1960. 12 pp.

Describes some findings gained from case studies of office automation conducted by the Bureau of Labor Statistics. Stresses the need for advance planning, prior notice, transfer and re-training of employees, reliance on attrition, recruitment from within, planning for the simultaneous recruitment of new jobs, the effective use of older workers, and provisions for severance.

Wolfbein, Seymour L. and Ernest W. Burgess. "Employment and Retirement," Chapter III, Aging in Western Societies, edited by Ernest W. Burgess. Chicago, University of Chicago Press, 1960. 492 pp.

This chapter is a statistical examination of length of working life, the older person as a worker, and the older worker and retirement in the United States and other Western societies. Occupational distribution of older workers, factors affecting retirement, and the prolongation of the working life are discussed.

Wolfbein, S. L. "The Length of Working Life," Fourth Congress of the International Association of Gerontology, July 1957. pp. 153-184.

The author describes some of the major implications of changing life expectancy and work life expectancy. Statistical data on changes in the length of working life are presented.

Wolfbein, Seymour L. "The Outlook for the Older Worker," Personnel and Guidance Journal, Vol. 36, October 1957. pp. 80-86.

The author presents data on the long term trends of life expectancy and working life expectancy in the United States, and discusses some of the implications of these trends.

U. S. Congress, House. Committee on Education and Labor. Impact of Automation on Employment; Hearings, Subcommittee on Unemployment and the Impact of Automation, 87th Congress, 1st Session, March 8-April 25, 1961. Washington, U. S. Government Printing Office, 1960. 793 pp.

Statements to the committee are presented by representatives of business, labor, government, as well as by academic economists. Data on the textiles, communications, steel, automobile, and transport industries are presented, treating basic employment trends and the effect of automation in each industry.

U. S. Congress, Senate. Committee on Employment Security and Retirement for the White House Conference on Aging, January 1961. Background Paper on the Employment Security and Retirement of the Older Worker. Part A. Economic Challenge of the 60's: Implications for Older Workers. Washington, U. S. Government Printing Office, 1960. 9 pp.

Summarizes labor force projections for the 1960's and 1970's, on the basis of Bureau of Labor Statistics long-range forecasts, and discusses the implications for older workers of the anticipated labor force growth. The economy will have a pressing need for skilled older workers during the 1960's, when there will be an actual decrease in the number of workers aged 35 to 44. The demand for older workers' services will decline in the 1970's; by 1975 the proportion of middle-aged workers in the labor force will be normal.

U. S. Congress, Senate. Committee on Employment Security and Retirement for the White House Conference on Aging, January 1961. Background Paper on the Employment Security and Retirement of the Older Worker, Part B. Retirement. Washington, U. S. Government Printing Office, 1960. pp. 10-73.

This second section of the Background Paper discusses two aspects of retirement: its financing (through public and private pension plans, and through deferred profit sharing plans), and its timing,

as affected by OASDI age requirements, by public employees retirement systems, and by private industry's policies. Among the problems discussed are the issue of flexible retirement policy, and questions of the size of retirement benefits and the methods by which they are financed.

U. S. Congress, Senate. Committee on Employment Security and Retirement for the White House Conference on Aging, January 1961. Background Paper on the Employment Security and Retirement of the Older Worker. Part C. Employment Security of the Older Worker. 86 pp. Washington, U. S. Government Printing Office, 1960.

Automation, changing defense requirements, foreign competition, and the special problems of depressed areas are discussed as the major causes of long-run unemployment of older workers. Age restrictions, which appear to vary with firm size and pension cost, contribute significantly to the older person's problem of finding employment. Policy measures, particularly legislation against age discrimination, education, and better personnel and job engineering methods are considered.

U. S. Congress, Senate. Committee on Labor and Public Welfare. The Aged and the Aging in the United States: A National Problem. Subcommittee on Problems of the Aged and the Aging, 86th Congress, 1st Session. Washington, U. S. Government Printing Office, 1960. pp. 27-63.

Part II of this report considers the employment problems of older workers. Particular attention is paid to the over-65 population and its decline in employment, present occupational distribution, projections of future rates of labor force participation, and special problems of the 65 to 69 age group. An appendix describes the efforts of Canadian and West European governments to promote the employment of older workers. For workers between 40 and 64, the major problem was age discrimination. State legislative action is recommended by the authors.

U. S. Congress, Senate. Committee on Labor and Public Welfare.  
Studies of the Aged and Aging, Vol. 4, Employment.  
Washington, U. S. Government Printing Office, 1957. 271 pp.

The studies collected for use by the committee in evaluating legislative proposals include: (1) A Department of Labor survey of employment opportunities, with a summary of the department's older worker program; (2) Recommendations for greater utilization of older workers, by Senator Thomas C. Desmond of New York; (3) A National Industrial Conference Board research report on retirement policies, procedures, and practices in 327 companies; (4) an evaluation of compulsory retirement programs; (5) a review of recent experiences of corporations engaged in preretirement and retirement aid and counseling; (6) a case study of continued employment of older workers; (7) an analysis of part-time employment of older workers; (8) A discussion of the role of private employment agencies in finding jobs for older persons; (9) the conclusions and recommendations of a 1955 New York State Conference on retirement; (10) a National Association of Manufacturers analysis of earning opportunities for mature workers; (11) an AFL-CIO spokesman's emphasis on the government's responsibility for maintaining full employment, and for meeting special needs of older workers; and (12) an outline of the benefits of the Federal Vocational Education Acts as applied to the Aging, prepared by the Department of Health, Education, and Welfare.

U. S. Congress, Senate. Report of the Special Committee on Unemployment Problems, with Minority and Additional Views. 86th Congress, Second Session. Washington, U. S. Government Printing Office, 1960. 194 pp.

This report contains an analysis of the gradually rising unemployment (Chapter III), and a discussion of specific factors related to unemployment: automation, foreign competition, and government procurement policies (Chapter V). The problems of special groups, including older workers, are reviewed. Major recommendations for alleviating unemployment are followed by minority views, which includes an account of the extent of age discrimination in the labor market.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment, Washington, U. S. Government Printing Office, 1960. pp. 534-612.

AFL-CIO, "Adjustment to Technological Change" (from Collective Bargaining Report, vol. 3, April-May, 1958, pp. 25, 26, 28, 30), summarizes the approaches through which most unions have sought to meet the problems arising from technological change. Unions want (1) advance notice and consultation on changes being made; (2) negotiation on questions raised by new job conditions, and (3) protection for workers whose jobs are being replaced by machines. Measures sought by unions in bargaining include reduction in the work week without reduction in pay, supplementary unemployment benefits, and adaptation of pension plans to provide for earlier retirement and vesting privileges.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

The AFL-CIO's paper, "Labor Looks at Automation," discusses the meaning of automation and describes its development and present use in several industrial areas. The impact of automation on output, and on the composition of the work force and the location of industry is described. With the increased productivity per man-hour, and an expanding labor force, high levels of employment can be achieved only by rapidly expanding markets and a high growth rate (5 per cent). Older workers not ready for retirement may find their skills obsolete, yet they may not be able to adjust to retraining or to the requirements of automatic production systems.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

Automation as one of the causes of unemployment is discussed in a series of readings included in the above volume.

"Automation: A New Dimension to Old Problems," By George B. Baldwin and George P. Schultz, describes automation's likely effects on industrial relations (improved working conditions, increased use of incentive systems, changes in managerial responsibility, the need for increased training, changes in work-content of jobs, in job classifications, and in the role of seniority). The problem of job displacement will focus new attention on such shock absorbers as severance pay, a guaranteed annual wage, unemployment benefits, increased information-sharing between managements and unions, and attempts to time labor-saving innovations with business upswings.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 269-284.

In his article, "Human and Social Impact of Technical Change," Solomon Barkin contrasts present favorable climate for technical change with past opposition. He discusses the impact of change when plants are closed, and when jobs are eliminated or changed in nature. Even in times of full employment and an expanding economy, organized efforts by all areas of society are needed to meet the challenge of technical change.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

"Automation" by the Economic Research Department, Chamber of Commerce of the United States, stresses the fact that automation will enable man to enjoy higher incomes and a larger volume of goods. Adjustments in the labor force will involve higher technological training for the average factory worker, and a movement of many of today's workers into the expanding service trade area.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

John Diebold's article, "Automation and Jobs--the Effect on the Worker" (Nation, Oct. 3, 1953, pp. 271-272), raises the question: "Are we capable of developing a culture that does not depend upon work to give meaning to our lives?" Automation will speed the process of releasing the worker from his job, and permitting him to exercise his human capacities. One of the basic problems of our day is to learn to utilize leisure as something more than a respite from past work and a period of preparing for additional work. This problem is one which automation accentuates but did not create.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

"Automation and the Labor Force," is reprinted from First National City Monthly Letter, New York, February 1956, pp. 20-23. Despite the decline in man-hour per unit of output, the aggregate demand for labor has steadily grown, and unemployment (at the end of 1955) was quite low. When business activity and total employment are at high levels, the problems of adjusting to automation are minimized and localized.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 534-612.

"Labor Views Planned Adjustment to Automation," by Nathaniel Goldfinger, emphasizes the necessity for extensive retraining programs, for which management and the government need to assume responsibility. Solutions to the problem of the worker who is too old to adjust to the demands of the new technology may involve earlier retirement provisions ~~negotiated pension plans~~, and

amendments to the Social Security Act to provide retirement benefits at an earlier age.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 758-819.

"The Older Worker and Hiring Practices," by Margaret S. Gordon (Monthly Labor Review, vol. 82, November 1959, pp. 1198-1205). reports the results of interviews with representatives of 65 firms in the San Francisco area in the period 1954 to 1956, and with 21 employment agencies in 1959. The majority of firms in the sample reported that they had upper age limits in hiring. The following reasons were given by larger firms for barring older job applicants: (1) emphasis on promotion from within; (2) influence of pension plans; (3) general comparisons of characteristics of older and younger workers; (4) emphasis on the nature of the work; and (5) influence of seniority. Among the smaller firms, which typically did not have pension plans or compulsory retirement provisions, hiring policies were much the same as those of larger firms, except for the fact that upper age limits were less likely to apply to all occupational categories.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment. Washington, U. S. Government Printing Office, 1960. pp. 758-819.

A section of this collection of readings on unemployment is devoted to the problem of the employment of older workers.

"Unemployment Among Older Workers," reprinted from International Labor Review, vol. LXIX, No. 6, June 1954, cites recent unemployment figures for older persons in Belgium, Norway, Denmark, the Netherlands, the United States, the United Kingdom, Switzerland, the Federal Republic of Germany, France, and Canada. The conclusion is drawn that although unemployment does not tend to increase with age, there are no exceptions to the rule that older people remain unemployed for longer periods than younger ones. Discrimination

against older workers is discussed, drawing on an inquiry conducted in 1950-51 covering 69 countries. Results of research studies made in various countries on old age and occupational skill, adaptability, accident risks, absenteeism and the significance of pension schemes are summarized.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment, Washington, U. S. Government Printing Office, 1960. pp. 534-612.

Charles C. Killingsworth, in "Automation in Manufacturing" (Industrial Relations Research Association Proceedings of the Eleventh Annual Meeting, 1958, pp. 20-34), discusses the employment effects of automation, especially as they affect particular geographical areas and occupational groups. Retraining may have limited usefulness; a movement of production workers into service and distribution areas is also necessary. Increase in the proportion of non-production workers will significantly affect union membership, unless unions organize larger proportions of white-collar workers than they have in the past.

U. S. Congress, Senate. Special Committee on Unemployment Problems. Readings in Unemployment, Washington, U. S. Government Printing Office, 1960. pp. 534-612.

Alfred L. Malabre, in the Wall Street Journal (Aug. 27, 1959, pp. 1, 12), describes the effects on workers displaced by Whirlpool Corporation's introduction of labor-saving machinery in their Evansville, Indiana division. Employment dropped from 7,700 to 5,500 in the three and one-half years, despite a 30 per cent increase in output in the plant. In the same journal (Dec. 1, 1959) officials of several companies located throughout the nation comment on the extent of company responsibility for workers displaced by automation. Union officials' views on the nature of union, management, and government responsibility are also stated.

U. S. Department of Labor. Manpower: Challenge of the 1960s.  
Washington, U. S. Government Printing Office, 1960. 24 pp.

Tabular, chart, and diagramatic presentation of expected changes in size and composition of the labor force during the decade of the 1960's. Compares the anticipated rate of growth of the work force in production industries with that of the work forces in service industries. The predicted total labor force of 87.1 for 1970 is derived as follows: 73.6 million for 1960, minus 15.5 withdrawals (because of death, retirement, marriage, child-bearing, etc.), plus 26.0 million young workers entering and 3.0 million women returning to the labor force during the decade.

U. S. Department of Labor. Our Manpower Future: 1955-65.  
Washington, U. S. Government Printing Office, 1957.

A chart book depicting anticipated changes in United States population and labor force during the decade 1955-1965. Bar charts show population growth by age group, changes in age, sex, and occupational composition of the labor force, and projected GNP in total (\$560 billion) and in value of goods and services per worker (\$6190), on the basis of an employment of 74 million persons in 1965.

U. S. Department of Labor, Bureau of Employment Security.  
Counseling and Placement Services for Older Workers.  
Bulletin No. 1512. Washington, U. S. Government Printing Office, 1956. 88 pp.

From a total of 7,361 job applicants aged 45 or over, an experimental group was given intensive counseling and placement service, with the result that this group had almost four and one-half times as many placements as the control group. Includes an analysis of upper age limitations as specified by industry, size of establishment, and occupational category, and a discussion of attitudes and practices contributing to employment problems of older workers.

U. S. Department of Labor, Bureau of Employment Security. Employing Older Workers: A Record of Employers' Experience. BES No. R-179. Washington, U. S. Government Printing Office,

Reports a series of cases in which companies successfully used older workers for a wide variety of jobs. The study stresses the capabilities of older workers, as shown by studies of their productivity, physical strength, skills and flexibility, and suggests that increased mechanization of jobs promotes the retention of older workers by placing increased reliance on maturity and dependability.

U. S. Department of Labor, Bureau of Employment Security. Older Worker Adjustment to Labor Market Practices, An Analysis of Experience in Seven Labor Markets. Bulletin R 151. Washington, U. S. Government Printing Office, 1956. 269 pp.

Reports the findings of a survey of labor market experience and problems of older workers in seven labor markets. Provides data on (1) the characteristics of unemployed older workers as compared with younger job seekers, and (2) employment patterns of older and younger workers, and labor market practices (as reflected in hiring and separation transactions) affecting the employment and unemployment experience of older workers. A summary is provided at the beginning and an analysis of age factors in labor turnover is offered at the end of the study of each labor market.

U. S. Department of Labor, Bureau of Employment Security. Pension Costs--In Relation to the Hiring of Older Workers. Bulletin E150. Washington, U. S. Government Printing Office. 1956. 26 pp.

Examines the widely-held view of employers that the costs of providing adequate pension rights are much higher for an older, new employee than for a younger one, and the corollary fear of unfavorable public reaction against permitting older, new employees to waive pension rights. The latter objection has been removed, the study argues, by the virtually complete coverage of private nonfarm farm employees by public pension programs, to which a modest sup

employees by public pension programs, to which a modest supplementary pension could appropriately be added. Pension costs and current charges are discussed, as are vesting provisions and the prospects of "portable" pension rights.

U. S. Department of Labor, Bureau of Employment Security. Employment Security Review. "Age as a Factor in the Employment Process." Vol. 24, April-May, 1957, entire issue.

An issue of the Review devoted to problems of older and younger workers, and programs designed to serve both groups. The first article, "Youth and Maturity in the Labor Force," by Lazar M. Paues, analyzes recent and current changes in the age composition of the labor force and summarizes the job-related characteristics of youth and more mature workers. Earl T. Klein's article, "Program Implications of Expected Population Shifts," points out that the ten million additional workers joining the labor force in the coming decade (1957-67) will come almost entirely from those under 25 and those 45 and over. In the absence of adequate vocational guidance and placement of young people, he emphasizes, the result will be repeated job shifting, misuse of potentialities, mal-adjustment, and unemployment in later years.

U. S. Department of Labor, Bureau of Labor Statistics. Adjustments to the Introduction of Office Automation. Bulletin 1276. Washington, U. S. Government Printing Office, 1960. 86 pp.

A survey of twenty offices in private industry which had been operating large electronic digital computer systems at least one year by mid-1957. Findings show that the extent of displacement and re-assignment was small but that the growth of office employment for the sample establishments was less than the national average. There were very slight increases in the average grade of job and only a very small number of positions were created for the new

data processing activities. Older workers suffered lowered job status less often than younger workers, because of company or union policies assuring job security. However, they were not promoted to the newly created electronic positions as often as younger workers.

U. S. Department of Labor, Bureau of Labor Statistics. Comparative Job Performance by Age. Study of Workers in Men's Footwear and Household Furniture Industries. Bulletin 1223. Washington, U. S. Government Printing Office, 1957. 60 pp. See also, Department of Labor, Bureau of Labor Statistics. Job Performance and Age-A Study in Measurement. Bulletin 1203. 1956. 72 pp.

Examines the relationship between job performance and age for 5,100 production workers in 26 firms (15 in footwear, 11 in furniture). For each of the three aspects of job performance a different pattern emerged: for attendance, no relationship was found; for output per man-hour, on the average there were changes associated with age, but wide variability about the averages; for continuity of service, the youngest and oldest age groups showed the highest per cent of separations, the latter group's index reflecting the influence of retirement.

U. S. Department of Labor, Bureau of Labor Statistics. Comparative Job Performance by Age: Office Workers. Bulletin 1273. Washington, U. S. Government Printing Office, 1960. 36 pp.

Data for this survey were collected in 1958-59 for about 6,000 workers whose employment was almost equally divided between 5 Federal Government agencies and 21 companies in private industry. Differences in output per man-hour among age groups of office workers in the survey were for the most part insignificant; considerable variation exists among workers within age groups, however. Workers in the older age groups had a steadier rate of output, with less variation from week to week, than younger workers.

U. S. Department of Labor, Bureau of Labor Statistics. Employment and Economic Status of Older Men and Women, Bulletin 1213. Washington, U. S. Government Printing Office, 1956. 41 pp.

Tabular data and summary descriptions of population trends, with estimates to 1975; age, geographical, industrial and sex composition of the labor force; life and work-life expectancy; income and sources of income for 1956; and retirement program and pension systems, including OASDI, the railroad retirement program, the federal civil service and state and local systems.

U. S. Department of Labor, Bureau of Labor Statistics. Older Workers Under Collective Bargaining. Part I. Hiring, Retention and Job Termination. Bulletin 1199-1. Washington, U. S. Government Printing Office, 1956. 30 pp.

An analysis of the older worker provisions of 1,687 major collective bargaining agreements covering a total of approximately 7.5 million workers reports that only a small proportion of the contracts stipulated that some older workers be hired, or forbade discrimination against older workers in hiring. The older worker who had retained his job, however, was generally assured a greater degree of job protection and more liberal benefits than the younger worker.

U. S. Department of Labor, Bureau of Labor Statistics. Older Workers Under Collective Bargaining. Part II. Health and Insurance Plans, Pension Plans. Bulletin 1199-2. Washington, U. S. Government Printing Office, 1956. 27 pp.

A study of 300 selected health and insurance plans under collective bargaining, covering almost five million workers (or about 40 per cent of all workers covered by such plans under collective bargaining contracts). The availability of benefits to active and retired workers and their dependents, the effect of hiring age on the availability of benefits, changes in the level of benefits during active employment on the basis of age alone, and the length of time benefits are provided to retired workers and their dependents are described.

U. S. Department of Labor, Bureau of Labor Statistics. Bulletin 1242. Population and Labor Force Projections, 1960 to 1975. Washington, U. S. Government Printing Office, 1959. 56 pp.

Presents population and labor force projections to 1975. Principle estimates: (1) The population of the United States will probably reach about 226 million by 1975; (2) Between 1955 and 1965 the labor force will increase about 11 million (4 million from women aged 35 and over, 4 million from the increased number in the 14-24 age group, and most of the remaining 3 million from the greater number of men aged 45-64); (3) Between 1965 and 1975 the labor force will grow by 15 million (3 1/2 million from males aged 25-44; 2 million from men 45 and over, 5 million from the youngest age group, 2 1/4 from women aged 35 and over, and 1 3/4 million from women aged 25-34); (4) the addition of these large numbers of young people and married women will mean an unusually large increase in the number of part-time workers: about 4 million of the increase in 1955-65 and 3 1/2 million of the 1965-75 increase will work part-time.

Franke, Walter H. and Richard C. Wilcock. The Economics of An Aging Population. A Syllabus and Annotated Bibliography. Ann Arbor, University of Michigan, Institute of Labor and Industrial Relations, 1959. 57 pp.

This teaching syllabus and annotated bibliography is one of a series (one each in economics, sociology, psychology, social welfare, and interdisciplinary social science) developed by the Inter-University Council. References are grouped by major topics: introduction to the economic aspects of an aging population; economic security for the aged (needs and resources, including public and private pensions); employment and retirement.

Hardin, Einar; William B. Eddy and Steven E. Deutsch. Economic and Social Implications of Automation: An Annotated Bibliography, Vol. 2, Literature 1957-60. Labor and Industrial Relations Center, Michigan State University, East Lansing, Michigan, 1961. 78 pp.

This work includes 236 annotated items classified according to ten primary headings, including: (1) employment, wages, profits, prices, output, and market structure; (2) job content and requirements, selection and training; (3) human relations, job satisfaction, and attitudes toward change; (4) union organization and collective bargaining; (5) planning and administration of change, and (6) community, government, and international relations.

The National Council on the Aging. Recent Publications on Aging. New York, 1961. 16 pp.

A supplementary bibliography to cover primarily the period June 1960 - April 1961. Also includes some of the more important publications previously acquired by the Council.

National Science Foundation, Office of Special Studies.

Bibliography on the Economic and Social Implications  
of Scientific Research and Development, NSF 59-41,  
Washington, U. S. Government Printing Office, 1959.  
53 pp., and 1960, 124 pp.

Selected bibliographies devoted to various approaches to the study of research and development, including sections on economic and social implications.

Turner, Arthur N. Employment and Retirement in an Aging Population: A Bibliography. Boston, Harvard University, School of Business Administration, 1951. 50 pp.

An annotated bibliography with references grouped under headings of background material, job performance, employment, and retirement. A summary of other bibliographies is also included.

U. S. Department of Health, Education, and Welfare, Special Staff on Aging. Selected References on Aging: An Annotated Bibliography. 1961 White House Conference Edition. Washington, U. S. Government Printing Office, 1961. 110 pp.

A bibliography organized around three broad topics; social aspects of aging; economic aspects of aging; and the aging process, health, and medical care. In addition, there are references under the following headings: reports of conferences and commissions, conference and group discussion meetings, periodicals, community helps, and guides to personal adjustment.

U. S. Department of Labor, Bureau of Labor Statistics. Implications of Automation and Other Technological Developments: A Selected Annotated Bibliography. Bulletin No. 1319. Washington, U. S. Government Printing Office, 1962. 136 pp.

A bibliography of over 500 references covering primarily publications issued since 1956 (supplementing Bulletin 1198, published in 1959. The first section is a general survey of the implications of automation; the second is devoted to technological changes in some 21 leading industrial sectors. Subject areas also covered include: employment and unemployment, occupational and skill requirements, training and retraining, collective bargaining, business management and organization, and the progress of automation in other countries.

U. S. Department of Labor, Women's Bureau. Employment of Older Women: An Annotated Bibliography. Washington, U. S. Government Printing Office, 1957. 82 pp.

A bibliography summarizing writings on three problems facing mature women who seek to enter or re-enter the work force: hiring practices, attitudes, and work performance. It includes articles and books dealing with the general problem of employment of older workers, in addition to the materials specifically concerned with older women.

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